

FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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CONTENTS.

	PAGE
Editorial Comment :	
The Zeppelin Antidote ...	407
Fact not Fiction ...	407
The Record "V.C." ...	408
Damage by Aircraft and National Relief ...	408
The Roll of Honour ...	410
Aircraft Work at the Front. Official Information ...	412
The British Air Services ...	412
Royal Aero Club. Official Notices ...	414
From the British Flying Grounds ...	414
Thinning the Zeppelin Fleet... ..	416
Eddies. By "Æolus" ...	417
"Aeromonia" ...	419
Flying at Hendon ...	421
The Screw Propeller. By F. W. Lanchester, M.Inst.C.E. ...	422
Aircraft and the War ...	423
Models. Edited by V. E. Johnson, M.A. ...	425
Imports and Exports, 1914-1915 ...	426

EDITORIAL COMMENT.

The Zeppelin Antidote.

For years past the Zeppelin airships have been a fetish in Germany wherewith to play upon the feelings and pockets of the people for various ends, according to the immediate pressing need of the moment. Even now, besides submarines, the airfleet of our enemy is the one saviour of the German nation in this world's struggle, to which they still cling as barnacles to a ship. This is easily accounted for, as little of the real truth is allowed to transpire through the German Press, the public being fed up upon the awful destruction already to the credit of the Zep. fleet, and the abject cellar-inhabiting terror which, as a consequence, has seized upon the small remainder of the British nation still in existence in these islands. As to the destruction of the various aircraft within our knowledge, this is so wrapped round with explanations that most of the totally destroyed units are, no doubt, still in existence in the minds of the general population.

As to mention of the British antidote, in the persons of our aeroplane flying officers, it is hardly to be expected

that too much is made of the achievements of this splendid band of men. Their latest exploits, however, will be difficult to hush up. No possible fairy-tale can smother the unexampled work in the early hours of last Monday morning of Flight Sub-Lieut. R. A. J. Warneford, V.C., when he bombed a Zeppelin over Ghent, and after the remarkable experience in the air, as set forth in the official communication elsewhere in this issue, regained the British lines unharmed. Equally will it be impossible to minimise the splendid attack on the airship sheds at Evere about the same time by Flight Lieuts. J. P. Wilson, R.N., and J. S. Mills, R.N., of which the official details are also recorded elsewhere. The moral effect and shock of these combined attacks must necessarily be very great, whilst the reduction of at least two of the units of the German air fleet is of considerable material importance, there being little doubt but that there was at least one if not two airships in the shed which these latter officers so successfully set fire to. It has, by the feat of Flight Sub-Lieut. Warneford, been demonstrated, as we have always held would be the case, that given daylight in which to operate, the results of contests between properly equipped aeroplanes and dirigibles, with reasonable luck, is a forgone conclusion in favour of the heavier than air machine. That the same opinion holds good in Zeppelin circles needs no argument to convince. All attacks hitherto have been made during the hours of darkness. The question of proper equipment, is one to be decided by experience only. Such bombs as are carried should certainly have good penetrating power at the point of impact, so that there is no chance of a well-launched missile proving harmless by reason of its shooting away off its objective.

In the previous raid recently, when our officers made it hot for the gasbag visitor, there is good evidence of bombs having been accurately thrown, and one of the airships struck, but apparently the anticipated sequence did not materialise. Hence our query as to the mechanical penetrating power of bombs as at present in use.

Fact not Fiction.

The performance itself of Lieut. Warneford has in it the substance for an ultra-sensational novel, which would but a few years ago have been treated with contemptuous scorn by the discerning reviewer. In this connection *The Times* agree that—

"A writer of sensational fiction who should have ventured before the war to depict such a combat between an airship and a small monoplane; who should have shown the aeroplane upset, righted in the air, forced to descend in enemy country; who should then have allowed his hero to succeed in restarting his engine, and to return unhurt to his base, would have been derided as a purveyor of grotesque impossibilities. All these things happen to-day, and are announced without a hint that that they are anything out of the common."

Yet we take leave to think that, without in one iota belittling the great deed of Lieut. Warneford, in the years to come it will be marvelled at that in the year 1915 such achievements were considered at all abnormal.

The Record "U.C."

It is not out of place, perhaps, that so great a revolution in this old-fashioned world of ours as the establishment of aerial navigation should have attached to it records of another character. We refer immediately to the awarding of the V.C. to Lieut. Warneford, R.N., by the King, in the record time of about 24 hours. That the remarkable performance of this fearless officer should receive such instant recognition at the hands of the Sovereign, conveyed as it was by a personal telegram of congratulation from King George, is another Royal recognition of the inestimable value in which our newly created flying services are held. It is a glorious compliment to the entire personnel, and the height of importance to which Aviation has risen in the estimation of the highest in the land, must be an unalloyed source of gratification to those who in the past have been responsible for pressing the claims of the great science until it has by sheer weight of worth come into its own in this epoch-making year of 1915. Mr. Winston Churchill is one who is much to be thanked by the Nation in general, and the Aviation industry in particular. Against many obstacles he fought for the development of aircraft, and fortunately, in a small measure, got his way, just before it was too late. Equally fortunate was the nation in having at such critical times men of the calibre of Commodore Murray Sueter and General Henderson, who not only believed in the great future of air navigation, but personally understood the techniques of the supremacy which they sought to establish. The credit for all the developments which have eventuated in such magnificent results under these commanders' guiding hands has to be chiefly placed with them, as by their efforts with the Navy and the Army respectively the body of men have been brought together to form the present wonderful organisations which are the admiration of the world—in all probability not least in Germany itself. By attacking the prowling Zep. night-birds near their nests, when they return in the morning to roost, is unquestionably an effective way of neutralising their unconcealed preference for hiding their doings under a bushel. Truly there is more than enough in the ghastly methods of the militarised subjects of William the Poisoner to justify the description of them by Signor Salandra, the great Italian Premier, as being "an atavistic throw-back to primitive barbarism."

Damage by Aircraft and National Relief.

Although very late, we still welcome the announcement made on Tuesday night last by the Premier, in reply to Sir G. Parker, in the House of Commons, when the Member for Gravesend asked whether, in the case of the destruction of property caused by the

attacks of aircraft, such as occurred in the raid last week in the Thames District, it was proposed to grant compensation to owners of property from public sources. Mr. Asquith, in reply, stated definitely that relief will be granted in these as in all previous cases, and he further added the information that the Government was considering the possibility of initiating a scheme of insurance of property. This is as it should be, and the sooner the details of the scheme are launched the better.

In January last there was a promise made by the Prime Minister to take measures to deal with the damage sustained as a result of the air raid on King's Lynn, &c. Since then, as far as we are concerned, we have no knowledge of any actual steps being taken to fulfil that promise, although it may be gathered from the above statement by Mr. Asquith that compensation has been made.

At the time, in the issue of January 29th, we recorded the facts as they then existed, and once again in that article drew attention to the suggestion which FLIGHT has hammered in ever since the middle of October last year, that the destruction brought about by the visits of the German air fleet should be a national liability, and not one to be borne by the individual citizen, whether it represented damage to his property or loss of life in his household.

In October last we made a very strong appeal in this direction, pointing out that the amount of compensation, in comparison to the enormous number of premiums which were being raked in by the insurance brokers, would be negligible, and if an enormous profit was to be made out of the nervousness of the British public, then it was for the Government to see that that profit was secured for the nation. Had this suggestion been adopted when we made it, by this time there would have been in hand on behalf of the nation a very large premium income, to be drawn against in the comparatively few cases in which damage has accrued in connection with the visits of the Zeppelins. But instead of this satisfactory state of affairs existing, very much to the contrary has come about. Even during the last few weeks the sum total of the fresh premiums must have been hugely increased, and therefore if the Government propose now to step in it will obviously be necessary for them to deal with this side of the question at the same time as they handle any new departure in the National Insurance direction relating to aircraft damage. It has been stated by Sir Arthur Markham that in the event of the Government taking up this attitude the companies which have already issued policies have said they do not intend to pay claims where the Government funds will meet the case.

Needless to say, such a subterfuge to avoid liability for their obligations should be provided for in any scheme put forward. There should be no difficulty in securing that in all cases where any property or person is already insured the insurers should meet their obligations in full under their policy. It should be a matter of easy adjustment for the National Insurance Fund to set matters right as between themselves and the insured in regard to any premium that may have been paid. This of course would apply only in the case of the Government, without premium, compensating fully for any damage done. Under any National Insurance Scheme in the event of the Government premium being less than the underwriter's premium, then the difference between

JUNE 11, 1915.

FLIGHT



FLIGHT SUB-LIEUTENANT R. A. J. WARNEFORD, V.C.

such premiums should also be readily brought into line. In any case it is indeed a satisfaction to find that at last this belated action is being taken, and the sooner the whole matter is made a national question, as we have always advocated, the better. We repeat it is not a case in which any one particular individual should

be penalised; it is entirely a national question, and for preference we should like to see full responsibility taken by the Government without premium. In comparison to other war charges it is likely to be a very small matter, and the moral effect throughout the country would indeed be great.



THE ROLL OF HONOUR.

THE Secretary of the Admiralty has announced the following casualties:—

Under date May 24th from France:

Suffering from Gas Poisoning.

Captain Francis S. Richards, R.M.A., Anti-Aircraft Brigade.

Driver F. Baker, Motor-Cyclist K. A. N. Everill, Sergeant J. E. Hayward, and Corporal N. H. Rann, all R.M.A., Anti-Aircraft Brigade.

Under date June 3rd. Expeditionary Force:

Wounded.

Surgeon Dudley D. Pinnock, R.N., Armoured Car Division.

Under date June 4th. Mediterranean Force:

Killed.

Sub-Lieutenant John Weightman, R.N.V.R., Armoured Car Division.

Wounded.

Lieutenant Norman E. Holden, R.N.V.R., Armoured Car Division.

Lieutenant Theodore D. Hallam, R.N.V.R., Armoured Car Division.

Slightly Wounded.

Lieutenant Wilfred A. Daniell, R.N.V.R., Armoured Car Division.

The following casualties in the Expeditionary Force have been reported from General Headquarters to the War Office:—

Under date May 28th:

Previously Officially reported Missing, now Unofficially reported Prisoner of War.

Second Lieutenant C. A. Gladstone, General List, attached R.F.C.

Under date May 30th:

Wounded.

Captain J. H. S. Tyssen, N. Somerset Yeomanry, attached R.F.C.

Undated:

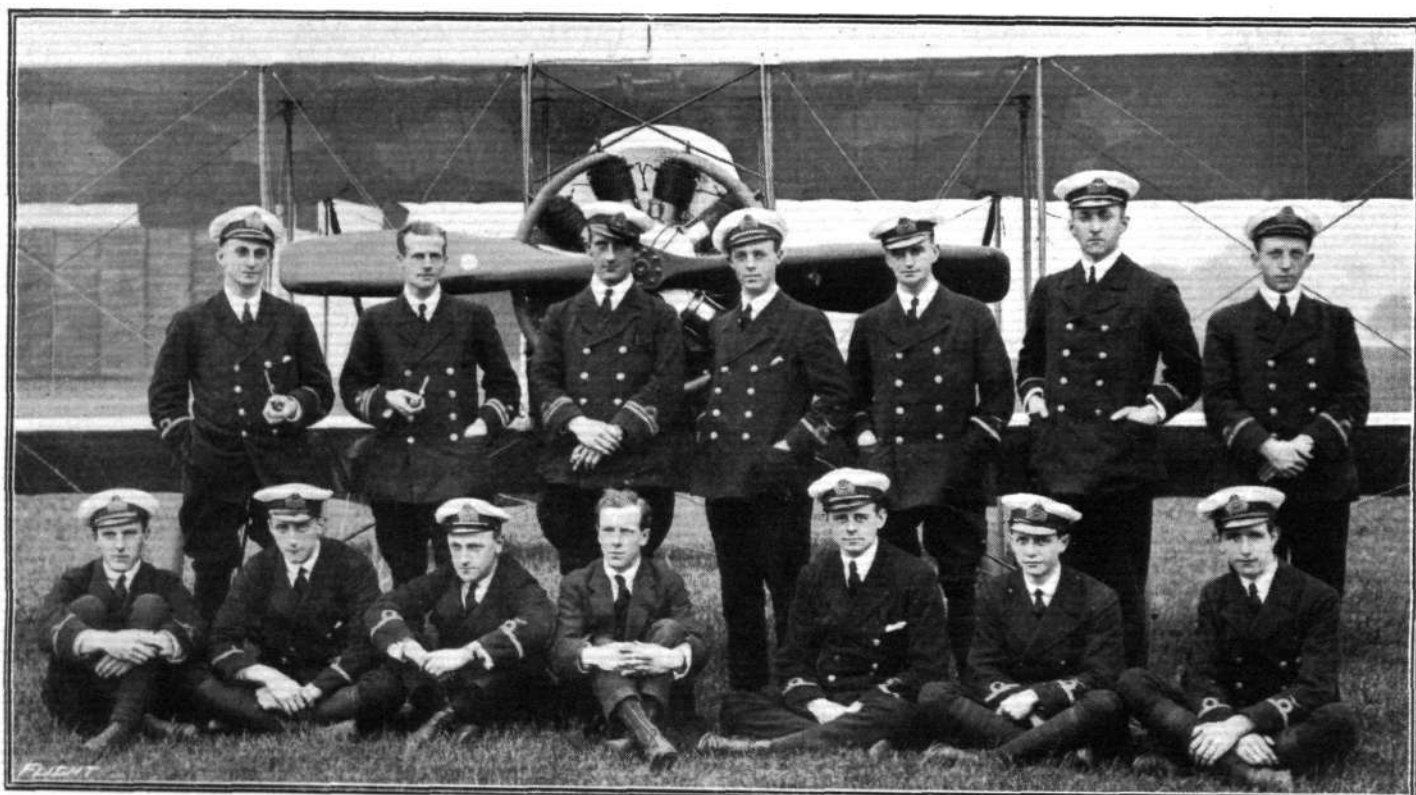
Previously Officially reported Missing, now Unofficially reported Prisoner of War.

Captain D. S. K. Crosbie, Argyll and Sutherland Highlanders and R.F.C.

Undated:

Wounded.

Lieutenant L. F. Richard, Royal Garrison Artillery and R.F.C.
Lieutenant L. M. Wells-Bladen, Royal Flying Corps.



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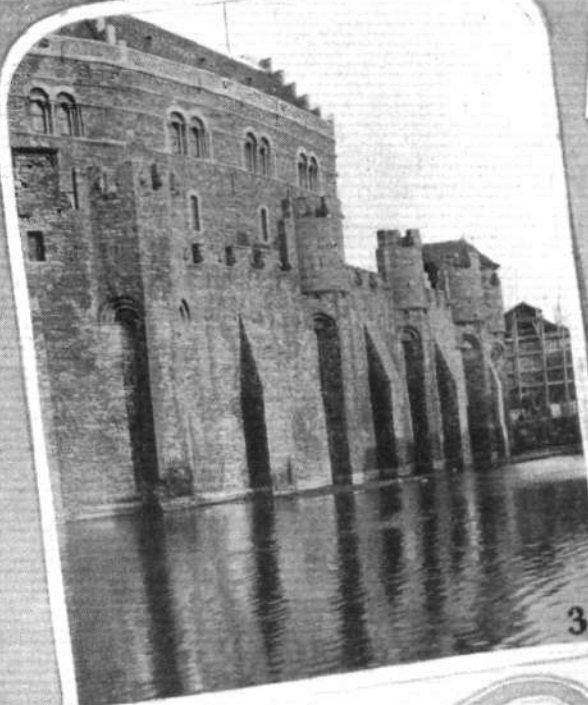
A GROUP OF OFFICERS AT CHINGFORD AERODROME.—Back row, left to right: 1. Flight Sub-Lieut. C. C. R. Edwards. 2. Flight-Lieut. L. D. D. McKean. 3. Flight-Lieut. C. W. Pulford. 4. Flight Sub-Lieut. R. H. Routledge. 5. Flight Sub-Lieut. J. S. Morrison. 6. Flight Sub-Lieut. Talbot. 7. Flight Sub-Lieut. H. S. Kerby. Front row, left to right: 8. Flight Sub-Lieut. T. C. MacLaren. 9. Flight Sub-Lieut. G. F. Smylie. 10. Flight Sub-Lieut. F. J. E. Feeney. 11. Flight-Lieut. F. Warren Merriam. 12. Flight Sub-Lieut. E. de Ville. 13. Flight Sub-Lieut. H. C. Vereker. 14. Flight Sub-Lieut. L. E. R. Murray.



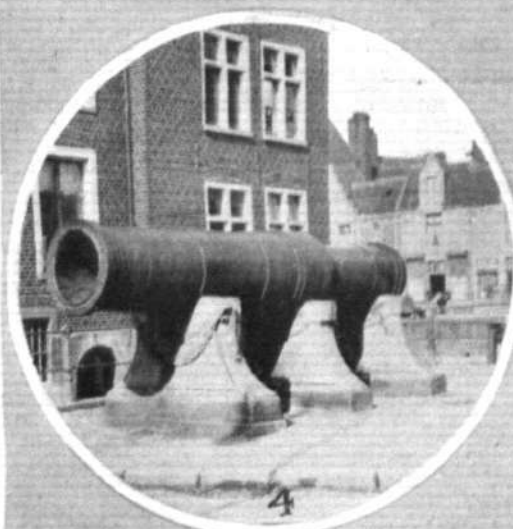
1



2



3



4

Views in Ghent, where Flight Sub-Lieut. R. A. J. Warneford, V.C., brought down the Zeppelin on Monday morning last.—1. Ghent—a mediæval house. 2. Ghent—Château des Comtes. 3. Ghent—Castle of Counts of Flanders. 4. The famous "Dulle Griete" cannon at Ghent, 15th century. Used at siege of Oudenarde. The Belgians were then, as they are now, great fighters.

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

IN a despatch dated June 8th from Sir John French, there was the following :—

"We have brought down two German aeroplanes, one opposite our right by gun fire, and the other in the neighbourhood of Ypres as the result of an engagement in the air with one of our aeroplanes."

(Particulars of the attacks on the Zeppelins, &c., appear on page 416.)

In the *communiqué* issued in Paris on the evening of the 3rd inst., there was the following :—

"Twenty-nine French aviators, between four and five o'clock this morning, bombarded the Headquarters of the Imperial Crown Prince. They dropped 178 bombs, many of which struck their objective, and also several thousand darts. All the aircraft were heavily shelled, but all returned safely."

In an official *communiqué* issued in Petrograd on Sunday night it was stated :—

"On the Vistula a Russian aviator successfully bombarded a string of enemy boats, and sank one of them."

The following was included in a *communiqué* issued by the Italian Great Headquarters on the 1st inst. :—



THE "X" AIRCRAFT RAIDS.

IN view of the decision of the Government not to allow details of aircraft raids to be published, we propose to identify each of these "incidents" by an index-number. Thus the raid on May 31st we have designated the "X" raid, and each subsequent raid will be given a number, thus the one on June 4th becomes "X1" and the one on June 6th "X2," and so on. Eventually when details are allowed to be published we shall give the respective information under these index numbers, which will facilitate easy reference to each particular raid.

The following announcements have been issued by the Admiralty, the dates in brackets at the end of each heading indicating when the statement was issued :—

The "X" raid May 31st (June 5th) :

"It is now possible to state definitely the number of

"The railway authorities at Ancona report that the damage caused to the railway bridge over the Marecchi, near Rimini, was not due to enemy ships, but to an Austrian dirigible, which bore in large letters the name "Ferrara," and carried an Italian flag.

In a *communiqué* issued by the chief of the Italian Naval General Staff in Rome on Sunday there was the following :—

"The same day in the Upper Adriatic a group of our torpedo destroyers, although unsuccessfully attacked by Austrian aeroplanes, again bombarded Monfalcone, and sank several large sailing craft laden with merchandise."

In a *communiqué* issued by the Italian Naval Staff, in Rome, on Monday it was stated :—

"Last night a fresh raid on Pola was made by our dirigible Aeronavire. It dropped several bombs, which all exploded on points of military importance."

In an official *communiqué* issued in Rome on Tuesday it was stated :—

"An enemy aeroplane flew over Venice this morning, throwing bombs and causing slight damage to a number of houses. A woman was slightly injured in the arm, and a young girl was struck on the head by a ricocheting bullet. Several bombs were also thrown on points inside the coast-line, one person being killed and a few injured."

fatalities caused by the hostile air raid which visited the neighbourhood of London on the night of May 31st. The number is six—one man, one woman, four children. This number does not include the case of an elderly woman whose death was attributed to shock caused by the raid."

"X1" raid (June 5th) :

"During last night hostile airships visited the East and South-East coasts of England. Bombs were dropped at various places, but little material damage was done. The casualties so far reported are very few."

"X2" raid (June 7th) :

"A Zeppelin visited the East Coast during last night. Incendiary and explosive bombs were dropped, causing two fires and resulting in five deaths and forty injured."



THE BRITISH AIR SERVICES.

UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, it is not repeated in this column.

Royal Naval Air Service.

THE following appeared in the Admiralty announcements of the 4th inst. :—

Flight Sub-Lieut. F. W. Gamwell, granted the acting rank of Flight Lieutenant, with seniority of June 3rd, and reappointed to "President," additional, for R.N.A.S.

The following entries have been made: L. G. Sieveking, as Probationary Flight Sub-Lieutenant, with seniority of June 7th; W. A. Briston, as Lieutenant (R.N.V.R.), with seniority of May 28th; Lord Clifton and R. C. Eller, both as Lieutenants (R.N.V.R.), with seniority of June 3rd; and C. Horsfield, as Sub-Lieutenant (R.N.V.R.), with seniority of June 3rd, and all appointed to "President," additional, for R.N.A.S.

The following appeared in the Admiralty announcements of the 5th inst. :—

Second Lieut. E. F. Beaumont, granted a temporary commission as Sub-Lieutenant (R.N.V.R.), with seniority of June 3rd, and appointed to "President," additional, for duty with R.N.A.S.

The following have been granted temporary commissions as Sub-Lieutenants (R.N.V.R.), with seniority of June 3rd and appointed to "President," additional, for duty with R.N.A.S. : E. J. MacGillvray, J. P. Elsdon, and E. J. Edward.

The following have been granted temporary commissions as Sub-Lieutenants (R.N.V.R.), with seniority of June 3rd, and appointed to "President," additional; W. T. Franks, C.B., G. E. Mills, J. J. Meakin, and T. Wontner Smith.

The following was included in the Admiralty announcements of the 8th inst. :—

Temporary Commissions as Lieutenant (R.N.V.R.) have been granted to the following: P. E. Doherty, A. E. Gelder, and V. C. H. Longstaffe, with seniority of May 31st; F. H. Taylor, with seniority of June 7th.

Chief Petty Officers (Mechanics), H. J. Atkins, C. Reynolds, D. M. Rees, E. P. Dampier, H. A. Saunders, R. A. Bell, S. R.

Gellett, and G. D. Nelson, all promoted to Acting Warrant Officers (2nd Grade), all with seniority of June 6th.

Royal Flying Corps (Military Wing).

The following appeared in the *London Gazette* of the 4th inst.:-

Flying Officer.—Temporary Second Lieutenant H. B. R. Grey-Edwards, Royal Artillery; May 14th, 1915. (Substituted for the notification which appeared in the *Gazette* of June 1st, 1915.)

Supplementary to Regular Corps.—To be Second Lieutenants (on probation): John G. McEwen, Douglas A. C. Symington; May 11th, 1915. Esca H. Colman; May 14th, 1915.

The following appeared in a supplement to the *London Gazette* issued on the 5th inst.:-

Assistant Equipment Officer.—Sec. Lieut. Lionel M. Bennett, Special Reserve; May 5th, 1915.

The following appeared in a supplement to the *London Gazette* issued on the 7th inst.:-

The temporary appointment of Capt. (temp. Major) Seaton D. Massy, 29th Punjabis, Indian Army, as a Squadron-Commander is antedated to March 24th, 1915.

Flight Commanders to be Squadron Commanders, and to be temp. Majors whilst so employed.—Capt. Philip B. Joubert de la Ferre, R.A.; May 25th, 1915. Capt. Harry T. Lumsden, Queen's Own Cameron Highlanders; May 27th, 1915.

Flight Commanders.—Lieut. (temp. Capt.) Charles S. Burnett, Reserve of Officers, from a Wing Adjutant and to retain his temporary rank whilst so employed; May 24th, 1915. From Flying Officers

—May 25th, 1915: Lieut. Vivian H. N. Wadham, Hampshire Regt., and to be temporary Captain whilst so employed; Capt. Reginald M. Rodwell, Prince of Wales's Own (West Yorkshire Regt.); Lieut. Thomas W. Mulcahy-Morgan, Princess Victoria's (Royal Irish Fusiliers), and to be temporary Captain whilst so employed; Lieut. William C. K. Birch, Alexandra, Princess of Wales's Own (Yorkshire Regt.), and to be temporary Captain whilst so employed; Lieut. George J. Malcolm, R.A., and to be temporary Captain whilst so employed; Capt. Ernest F. Unwin, A.S.C.; Capt. James L. Jackson, 3rd Batt. Connaught Rangers.

Flying Officers.—May 25th, 1915: Temp. Lieut. F. J. Powell, 18th (Service) Batt. (3rd City) Manchester Regt., and to be transferred to the General List; Sec. Lieut. S. W. Caws, Special Reserve; Sec. Lieut. C. F. Collett, Special Reserve.

Temporary appointment made:

Flight Commander (without pay or allowances).—Capt. (temp. Major) Herbert F. Wood, 9th (Queen's Royal) Lancers, Special Reserve; May 26th, 1915.

The following appeared in the *London Gazette* of the 8th inst.:-

Supplementary to Regular Corps.—Second Lieutenants (on probation) confirmed in their rank: Marwood E. Lane, Oliver D. Filley, and Ernest A. E. Wood.

To be Second Lieutenants (on probation): Robert G. Gould; May 7th, 1915. Sacheverell A. Hebden; May 17th, 1915. Harold R. Johnson; May 22nd, 1915. Rex G. Bennett; June 1st, 1915.



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SOME OFFICERS OF No. 3 SECTION, KITE-BALLOON SERVICE R.N.A.S.—Back row, left to right: 1. Sub-Lieut. O. A. Butcher, R.N.A.S. 2. Sub-Lieut. D. Gill, R.N.A.S. 3. Sub-Lieut. R. A. Davey, R.N.V.R. 4. Sub-Lieut. G. G. Omanney, R.N.A.S. Front row, left to right: 5. Flight Sub-Lieut. P. C. Douglas, R.N.A.S. 6. Lieut. B. S. Benning, R.N.A.S. 7. Col. E. M. Maitland, Wing-Commander, R.N.A.S. 8. Sub-Lieut. B. C. Windeler, R.N.A.S. 9. Sub-Lieut. H. F. Mills, R.N.A.S.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Aviators' Certificates.

THE following Aviators' Certificates have been granted:—

- 1283 2nd Lieut. Guy Neville Teale (8th Buffs) (Maurice Farman Biplane, Military School, Harrow). May 5th, 1915.
- 1284 Commander Charles Laverock Lambe, R.N. (Maurice Farman Biplane, Royal Naval Air Station, Chingford). May 29th, 1915.
- 1285 2nd Lieut. Alfred John Michell Clarke (7th Batt. Gloucester Regt.) (Maurice Farman Biplane, Military School, Farnborough). May 30th, 1915.
- 1286 Cecil McKenzie Hill (Hall Biplane, Hall School, Hendon). May 30th, 1915.
- 1287 2nd Lieut. Charles Francis Piercy, R.F.A. (Maurice Farman Biplane, Military School, Farnborough). May 30th, 1915.
- 1288 Flight Sub-Lieut. Gilbert Formby Smylie, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). May 31st, 1915.
- 1289 Flight Sub-Lieut. Cecil Douglas Morrison, R.N.A.S. (Maurice Farman Biplane, Royal Naval Air Station, Chingford). May 31st, 1915.
- 1290 Keith Day Pearce Murray (Maurice Farman Biplane, Military School, Brooklands). June 1st, 1915.
- 1291 Charles Edwin Wardle (Maurice Farman Biplane, Military School, Brooklands). June 1st, 1915.
- 1292 2nd Lieut. Alfred Delves de Broughton (14th Reserve Cavalry) (Caudron Biplane, Ruffy-Baumann School, Hendon). June 1st, 1915.
- 1293 2nd Lieut. Oswald Ernald Mosley (16th Lancers) (Maurice Farman Biplane, Military School, Shoreham). June 2nd, 1915.
- 1294 Eric Brant Broughton (Maurice Farman Biplane, Military School, Brooklands). June 2nd, 1915.
- 1295 William Douglas Stock Sanday (Maurice Farman Biplane, Military School, Brooklands). June 2nd, 1915.
- 1296 2nd Lieut. Albert Charles Hagon (Royal Warwickshire Regt.) (Maurice Farman Biplane, Military School, Shoreham). May 29th, 1915.
- 1297 2nd Lieut. Gordon Mountford (North Staffordshire Regt.) (Maurice Farman Biplane, Military School, Harrow). May 29th, 1915.
- 1298 2nd Lieut. Arthur Inglis Burnie (8th Buffs) (Maurice Farman Biplane, Military School, Shoreham). May 31st, 1915.
- 1299 Corporal John Gabriel O'Giollagain, R.F.C. (Maurice Farman Biplane, British Flying School, Le Crotoy, France). June 1st, 1915.
- 1300 2nd Lieut. Geoffrey Charles Herbert Dorman, R.E. (Maurice Farman Biplane, Military School, Shoreham). June 2nd, 1915.

- 1301 2nd Lieut. William Sholto Douglas, R.H.A. (Caudron Biplane, British Flying School, Le Crotoy, France). June 2nd, 1915.
- 1302 2nd Lieut. Jonathan Noel Clulow Dashington (Manchester Regt.) (Maurice Farman Biplane, Military School, Farnborough). June 2nd, 1915.
- 1303 Air-Mechanic Arthur James Shaw (Caudron Biplane, British Flying School, Le Crotoy, France). June 3rd, 1915.
- 1304 Brigadier Maurice Edward Franchomme (1st Regt. of Guides) (Belgian Subject) (L. and P. Biplane, London and Provincial School, Hendon). June 4th, 1915.
- 1305 Reginald Francis Beindge Baynes (Maurice Farman Biplane, Military School, Brooklands). June 5th, 1915.
- 1306 Flight Sub-Lieut. Colin Temple MacLaren, R.N.A.S. (Maurice Farman Biplane, Royal Naval Air Station, Chingford). June 6th, 1915.
- 1307 Victor Douglas Bell (L. and P. Biplane, London and Provincial School, Hendon). June 7th, 1915.
- 1308 Edward Arthur Beckton Rice (Maurice Farman Biplane, Military School, Brooklands). June 8th, 1915.

THE FLYING SERVICES FUND administered by THE ROYAL AERO CLUB.

THE Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers and men.

Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.

Subscriptions.

	£	s.	d.		£	s.	d.
Total subscriptions received to June 2nd, 1915	9,143	4	0	Miss M. Y. Lyle	1	1	0
Philip Smith	0	15	0	Mr. and Mrs. F. St.			
C. L. M. Eales	1	1	0	John Bullen	1	1	0
The Children of Stubbing School	0	5	0				
				Total, June 9th, 1915	9,147	7	0

166, Piccadilly, W. B. STEVENSON, Assistant Secretary.

FROM THE BRITISH FLYING GROUNDS.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Plenty of good work was put in last week by the following pupils, who are all Probationary Flight Sub-Lieutenants:—

Monday, straights with instructor: Blackburn, Hardman, Leigh, Pearson, Pennington, and Wyllie. Straights alone: Blackburn and Leigh. Circuits: Simpson.

Tuesday, straights with instructor: Cadbury, Hardman, Pearson, Watkins, and Wyllie. Straights alone: Blackburn and Leigh. Half circuits: Blackburn.

Wednesday, straights with instructor: Cadbury, Hardman, Pearson, Pennington, Watkins, and Wyllie. Straights alone: Leigh. Circuits: Blackburn.

Thursday, straights with instructor: Cadbury, Hardman, Pearson, Pennington, Watkins, and Wyllie. Straights alone: Leigh and Pennington. Circuits: Blackburn.

Friday, straights with instructor: Cadbury, Hardman, Linnell, Pearson, Watkins and Wyllie. Half circuits: Leigh. Circuits and eights: Blackburn and Simpson.

Saturday, straights with instructor: Cadbury and Linnell.

Brevets taken during week:—May 31st: Smylie; June 5th: Blackburn; both very good tickets.

Beatty School.—The following pupils were out during last week, accompanied by the instructors:—Messrs. Arbon (48 mins.), Banks (32), Bond (43), Broughton (15), Bush (20), Chalmers (95), Crossman (10), Delves (8), Eaton (102), Fawcett (25), FitzHerbert (43), Fox (37), Hodgson (30), Holland (48), Johnston (55), Jones (65), King (57), Morgan (27), Rawcliffe (25), Robb (44), Ross (63), Rutherford (24), Spicer (56), Tomlinson (83), Vickers (25), Whincup (20), Zimmermann (26), Hibbard (44), Theo (10), Coates (10), Blandy (10), and Boyle (15).

The instructors were : Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodder, and P. A. Johnston ; the machines in use being Beatty-Wright dual control and single-seater propeller biplanes and Caudron tractors. Extra practice was taken by Messrs. Boyle and Blandy. Mr. P. A. Johnston took his certificate on Friday after only 2 hrs. 13 mins. flying.

Exhibition flights were given on Thursday, Saturday, and Sunday, and three passenger flights were taken.

Hall School.—Last week was a record week's work at the Hall School. The pupils have received tuition every day of the week, both morning and evening. The following pupils are progressing exceptionally well : Messrs. Furlong, Minot, Snook, Mitchell, and Lieut. Raymond-Barker. The other pupils are progressing well. With instructors Cecil Hill and H. James : Messrs. Bayley (42 mins.), Snook (100), Hammer (69), Hatchman (79), Snowden (87), Booker (65), Mason (37), Mitchell (65), Millbourn (58), Scott (58), Gay (56), Yonge (57), Lieut. Raymond-Barker (50), Lieut. R. C. Grant (52), Lieut. Jowett (25), Lieut. J. R. Phillpott (47). With Instructor H. Stevens : Messrs. Lieut. Raymond-Barker (12 mins.), L. Minot (59), Furlong (87), Snook (32), Mason (9), Mitchell (25). Mr. Hall took up the following pupils for passenger flights : Lieut. Phillpott (10 mins.), Lieut. Grant (7), and Yonge (10). Mr. Stevens took up the following pupils for passenger flights : Lieut. R. C. Grant (12 mins.), Bayley (12), and Scott (12) on two seater biplane No. 2. Machines in use : Hall (Government type) tractors.

Items of the week : Mr. Scott tried twice to emulate "Pegoud," but on the ground. Luckily the machine, which is very strongly built, proved victorious over Mother Earth. Lieut. Jowett bombarded a flock of sheep with great damage to the enemy, but the machine sustained only slight injuries. The morale of the pupils is excellent.

London and Provincial Aviation Co.—Last week instructors were Messrs. W. T. Warren, M. G. Smiles, J. H. Moore and W. D. Smiles. Machines in use : 3 L. and P. biplanes.

Work done, Monday, Messrs. Wattinne, Nethersole and Minter rolling ; Messrs. Bell, Franchomme and Irwing straights ; Mr. Turner circuits and eights, then took a good steady ticket.

Tuesday, Messrs. Wattinne and Minter rolling ; Messrs. Bell, Franchomme, Nethersole and Irwing straights ; Mr. Franchomme half circuits.

Wednesday, Messrs. Bell, Nethersole and Irwing straights ; Mr. Wattinne rolling ; Mr. Franchomme circuits.

Thursday, Mr. Franchomme circuits and eights.

Friday, Mr. Franchomme circuits and eights ; then took good brevet. Messrs. Bell, Irwing and Wattinne straights.

Saturday, Mr. Bell half circuits ; Messrs. Moynihan, Minter and Dower rolling.

Sunday, Mr. Bell circuits and eights ; Mr. Irwing straights ; Messrs. Moynihan, Minter and Dower rolling.

Ruffy-Baumann School.—The main feature of last week has been construction, and most pupils have gained a considerable knowledge of internal matters

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New German Airships.

ACCORDING to the *Daily Mail* correspondent at Copenhagen a new type of German airship has made its appearance over the Baltic. He said :—

"The new type of Zeppelin airship is rounded at the front and has a sharp tail. The vessel is heavily armed. Three tanks for carrying poisonous gas bombs are slung beneath the gondola or

aeronautic, especially Mr. Robertson, who is making a particular study of aeroplane construction.

Wednesday was a good day, and all pupils had considerable practice on the 60 h.p. Caudron type, which is now showing up in good form. Bell, Crawford, Brown, England, Cole, May and Leong were all out, the last-named for extra practice.

Thursday, Hudson, Cole, May, Fenning and most other pupils were out both morning and evening, and on Monday this week much good work was accomplished on a 60 h.p. R.-B. biplane.

Instructors : Baumann, Ruffy, Virgilio and Winchester.

One of the vacancies has now been filled, but there



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Flight Sub-Lieut. A. R. Cox, R.N.A.S., who has passed for his brevet at the Chingford Aerodrome.

are still two places open for new pupils. Applicants should write in first instance to Mr. Clarence Winchester, who will immediately forward all particulars.

Northern Aircraft Co., Ltd.

The Seaplane School, Windermere.—Flying on Thursday, Friday, and Saturday last week. Instructors : W. R. Ding and J. L. Parker. With instructor : Probationary Flight Sub-Lieutenants Perrett, Hume, Laver, Graham, Hodges, Messrs. Reid and Laidler. Straights : Flight Lieutenant Atherton and Mr. Slingsby. Figures of eight : R. Buck. Machines : Avro, 50 Gnome ; N.A.C. monoplane, 80 Gnome.

One of the students had the misfortune to stall the Avro, with the result that she side-slipped and did a vertical nose dive from 300 feet. Although the machine was fairly effectively "piled" the pilot was not injured in any way. Had such a smash taken place on the land nothing would have saved him.

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navigating chamber, and the tanks are fitted with a newly invented bomb-dropping apparatus. The new airship has a smaller crew than an ordinary Zeppelin, but her speed is reported to be much greater."

Judging from the description of the shape of the vessel it would seem that the Germans are now using airships of the latest "M" type for scouting over the Baltic.

THINNING THE ZEPPELIN FLEET.

THE gradual reduction of the Zeppelin fleet continues, and once again the Royal Naval Air Service has shown that with the opportunity the officers quickly give a good account of themselves. By the award of the Victoria Cross, in record time, to Flight Sub-Lieut. Warneford, R.N., in recognition of his excellent work in destroying the Zeppelin near Ghent, special honour has again been accorded to the services. Flight Sub-Lieut. Warneford's exploit was briefly told in the following announcement issued by the Admiralty on the 7th inst. :—

"At three o'clock this morning Flight Sub-Lieutenant R. A. J. Warneford, R.N., attacked a Zeppelin in the air between Ghent and Brussels at 6,000 ft. He dropped six bombs, and the airship exploded, fell to the ground, and burnt for a considerable time. The force of the explosion caused the Morane monoplane to turn upside down. The pilot succeeded in righting the machine, but had to make a forced landing in the enemy's country. However he was able to re-start his engine, and returned safely to the aerodrome."

Twenty-four hours afterwards the following announcement of the award of the Victoria Cross was issued by the Admiralty :—

"His Majesty the King has sent the following telegram to Flight Sub-Lieutenant Warneford :

"I most heartily congratulate you upon your splendid achievement of yesterday, in which you, single-handed, destroyed an enemy Zeppelin.

"I have much pleasure in conferring upon you the Victoria Cross for this gallant act.

"GEORGE, R.I."

On Wednesday it was announced that on the nomination of General Joffre, the French Minister of War had decided to confer upon Flight Sub-Lieut. Warneford the Cross of a Chevalier of the Legion of Honour, in recognition of his brilliant exploit.

Thus does appreciation quickly follow the outstanding deeds of valour of the men at the front who are making history.

Supplementing the above brief official particulars, there have been various accounts from both Dutch and French sources as to what actually occurred, and it is to be hoped that eventually a more detailed official statement will be issued, so that any differences may be cleared up. From some of these accounts it appears that the airship was caught in the neighbourhood of Ghent, and as Flight Sub-Lieut. Warneford was able to get above it, he dropped bombs, one—the sixth—at least of which found its billet. After some small explosions, the whole airship is said to have become enveloped in flame and smoke, and crashed down on to the Grand Beguinage de Saint Elisabeth, a nunnery situated at Mont Saint Amand, close to Ghent. According to the news received from Dutch sources, the crew of 28 officers and men were killed, while two nuns, a man and a child, perished in the fire at the convent, several others being injured. Although the official announcements so far made most emphatically state that Flight Sub-Lieut. Warneford carried out the attacks single-handed, some accounts state that two aeroplanes, one of them French, were engaged. It is possible that the second aeroplane may have been one of those which took part in the raid on the airship shed near Brussels, and which, it is understood, started off in company with Flight Sub-Lieut. Warneford, while the reference to a French machine may arise from confusion owing

to the fact that Lieut. Warneford was using a Morane "parasol," which would be recognised as a French machine. Some accounts speak of the airship as returning from a scouting expedition regularly carried out along the Belgian coast, and as training for raids on England, but in other quarters it is believed that the airship was returning from Monday night's raid on the East Coast. It is stated that the aeroplanes also attacked the airship with rifles, and were replied to with machine guns and small shell fire. Accounts written by correspondents at the British Headquarters in the Field give the information that Lieut. Warneford was compelled to land owing to his involuntary loop having emptied the main petrol tank, and that on landing he was fortunately able to obtain a supply from the emergency tank, and to get away before enemy soldiers arrived. Writing from the Pas de Calais to the *Daily Mail*, Mr. W. Beach Thomas makes no mention of this landing, but states that the pilot flew off to the sea, and following the coast, landed behind the Belgian lines, where he was arrested on suspicion as a spy, and had to make a long journey to a British base before the matter could be put right.

Flight Sub-Lieut. Warneford was born at Cooch-Behar, India, twenty-three years ago, and came to England at an early age. On leaving school he spent some years in the Mercantile Marine, and then went to Canada, from whence he returned soon after the outbreak of war and joined up with the Sportsmen's Battalion. Obtaining a transfer, he secured a commission in the Royal Naval Air Service, and qualified, under the tutelage of Flight Lieut. Merriam, for a pilot's certificate at Hendon on February 25th last. He subsequently proceeded to the Central Flying School, Upavon, and the Naval Flying School at Eastchurch, and went on active service on May 7th.

In connection with the achievement by Flight-Lieuts. Wilson and Mills, which was carried out about the same time, and within measurable distance of Lieut. Warneford's *coup*, the following announcement was issued by the Admiralty on the 7th inst. :—

"This morning at 2.30 o'clock an attack was made on the airship shed at Evere, north of Brussels, by Flight-Lieutenants J. P. Wilson, R.N., and J. S. Mills, R.N. Bombs were dropped, and the shed was observed to be in flames. It is not known whether a Zeppelin was inside, but the flames reached a great height, coming out from both sides of the shed. Both pilots returned safely."

As a military item this attack ranks equally with Lieut. Warneford's exploit, as there appears to be little doubt that there was one, if not two, airships in the shed at the time of the attack. Reports to this effect are borne out by the official statement as to the great height attained by the flames. It is scarcely conceivable that such a state of affairs would have resulted from the dropping of bombs into an empty shed. Both the aeroplanes taking part in the attack were fired at by anti-aircraft guns, but managed to get clear and make their way back safely to the British lines.

Flight Lieutenant J. P. Wilson was a pupil at the Vickers School at Brooklands, and obtained his certificate on June 8th, 1914. It will be recalled that he was mentioned in Admiralty despatches early in April for dropping bombs on submarines at Zeebrugge.

Flight Lieutenant J. S. Mills was instructed at the Grahame-White School, Hendon, obtaining his pilot certificate on January 26th last.

EDDIES.

IF one were to ask the question of the first fifty people one met: Which single feat achieved during the week has been hailed with greatest satisfaction by the general public? the answer would undoubtedly be: The bringing down of a Zeppelin by Flight Sub-Lieut. Warneford, R.N. Following as it does so closely on the repeated visits to various parts of the country by Zeppelins recently, this daring performance has not failed to have a most cheering effect on that section of the public which, not understanding the immense difficulties firstly of locating a prowling invader in the darkness of the night, and secondly of dealing effectively with him, were inclined to feel a certain uneasiness at the thought that such a number of raids could have been successfully carried out with immunity. If for no other reason the destruction of the Zeppelin entitles Flight Sub-Lieut. Warneford to all honour, and it should not be forgotten that the loss of the airship and her crew will be severely felt in Germany, where the moral effect is bound to be considerable. Even now I have no doubt that there are grumblers who are not even satisfied with knowing that a Zeppelin was destroyed, but think that it ought to have been brought down somewhere just outside London where the wreck could have been reached at the expenditure of round about twopence.

x x x

Among the people rejoicing over Sub-Lieut. Warneford's success, few will be more pleased than his tutor, Flight Lieut. F. W. Merriam, who initiated him in the art of handling the control lever, and who has always predicted that here he had a pupil of more than usual promise. The instructor's faith in his pupil has been amply justified, and Merriam has received another addition to the long list of prominent pilots who had their early breaking in under his hands.

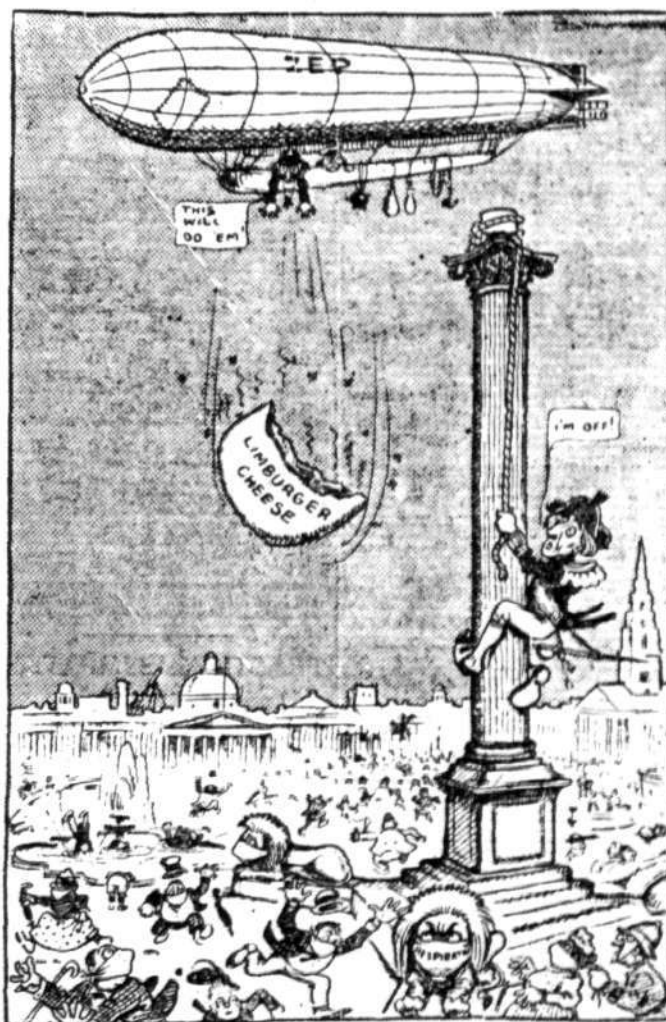
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Although a Zeppelin hurling to destruction in a blaze of flames is likely to grip the popular imagination to a much greater extent than the destruction by bombs of an airship shed that may or may not have at the time housed a Zeppelin, sight should not be lost of the fact that the latter feat may quite possibly be just as important and of as great military value, especially as, according to the latest reports, there is every reason to believe that a Zeppelin was indeed housed in the shed at Evere, North of Brussels, which was successfully bombed and set on fire by Flight Lieuts. J. P. Wilson and J. S. Mills. These two officers are therefore also to be congratulated on their brilliant success.

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Just by way of illustrating to those irresponsible critics who are clamouring loudest for nightly aeroplane patrols of six hours each, and what not, and who seem to think that our service pilots are gifted with the eyes of a cat for seeing in the dark, and had in addition, in common with that domestic pet, the gift of always falling on their feet, no matter how bad a tumble they may get up against—some of the joys of night flying across country—the following experience that befell one of our R.N.A.S. pilots may be related. It was during one of the recent raids that the pilot in question was told off to fly from the air station to which he belongs to a point somewhere in the anticipated route of the Zeppelin in order to attempt to cut off the enemy's retreat. After flying for some time, climbing all the while, there was a sudden bang! flash! bang! flash!

An inlet valve had broken, and the engine was firing back through the crankcase and carburettor. To keep the engine going would almost certainly mean that the engine would catch fire, while to switch off meant coming down there and then in pitch darkness, and chancing what might be the nature of the country below. As the only alternative that did not spell certain disaster, the pilot decided on turning about and attempt to regain the aerodrome from which he had started. Fortunately, at the moment when his engine gave out he was at a good height, and by keeping his glide as flat as he dared, without risking a stall for his machine, he managed to keep aloft for 25 mins. At the end of that period his altitude had been reduced to a dangerous degree, and he had just made up his mind that the end was near when he managed to discern a promontory that looked familiar. Somewhere near, he knew, another aerodrome offered safety if he could only locate and reach it. On the right he saw a faint light, towards which he steered in the hope that it might indicate the landing ground. This fortunately proved to be the case, and he made a landing which would have been perfectly normal had it not been for the fact that just before coming to a standstill the machine ran into a roadway and gently stood on its nose.



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THE WORST "FRIGHTFULNESS."—What we may expect in Trafalgar Square.

As luck would have it, the propeller happened to be horizontal at the moment, and the machine came to rest on one wing tip and the propeller. Damage *nil*, but what possibilities he had missed. Next day he flew it back to his air station. The thoughts that crossed through his mind during that 25 mins. glide can be imagined.

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On the same night another pilot had similar trouble with his engine, and being at the time within sight of a river he decided to come down near one of the banks, where at least he would have a chance of swimming ashore. When nearing the surface he flattened out, and as the machine lost flying speed he pulled back his control lever as far as it would go, thinking that a pancake would be the safest way of dropping into the water. To his surprise there was no splash, and suddenly the machine cocked her tail up in the air and finished up her part of the transaction by standing on her nose. On scrambling out, the pilot found that he had alighted on the mud at low tide, and was able to proceed on foot to requisition help.

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If the reports that arrive from various sources are to be credited, there are all sorts of new forms of "frightfulness" in store for some of us—what with asphyxiating bombs carried in tanks fitted with special launching devices, and aluminium aerial torpedoes sustained by gas and controlled by wireless. One report even states that the crew of some of the latest Zeppelins include men capable of making a fresh supply of gas bombs during the voyage! Unless the poisonous gas charges are obtained from the exhaust of the Maybach engines, it is difficult to see what advantage is to be derived from making the bombs *en route*. The story somehow reminds one of the German balloonists who, being forced to throw overboard all available articles, in their frantic search came across a string of sausages. Throwing these out did not in the least appeal to their Teutonic sense of economy. Then one of the party conceived the brilliant idea that the same result might be obtained by eating these miniature Zeps. Which, with remarkable promptness, they at once proceeded to put into execution.

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Regarding my little par. in "Eddies" in our issue of May 21st with reference to the use to which captured machines are put, I have received the following interesting communication from a reader in a neutral country: "I can assure you that the Kultur people do use French and English machines for war and school purposes. In *Flugsport*, of May 9th, there is a picture of a captured Voisin avion, which they use as a school machine, while some of the captured M. Farman avions are used against our Russian friends.

"I know too that the Goedecker factory is now turning out a biplane which is, except for the chassis, an exact copy of the well-known Avro biplane, that was lost on the first raid on Friedrichshafen, but not half as good of course, because no German has brains enough to build a plane like the Avro—any way, not Mr. Goedecker."

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Last week mention was made in "Eddies" of the project of using aeroplanes to aid sealers in locating the herds. It seems probable that yet another novel use will be made of them. A relief expedition for the explorer Vilhjalmur Stefansson and his companions is under consideration, and if the expedition sets forth this summer

there is every probability that it will include hydro-aeroplanes in its equipment. Mr. McConnell, who was Stefansson's secretary, was ordered back south about a year ago, when he turned over to his chief his rifle and 400 rounds of ammunition. This supply is thought to be sufficient to provide the party with game for two years. The rescue project now under discussion is a schooner with auxiliary power and deck space for three hydro-aeroplanes. A base would be established at Wrangel Island, and from that point the seaplanes could make daily reconnaissance flights over the surrounding country and in this way search as great an area day by day as it would otherwise take weeks or perhaps even months to survey. The project is an interesting one, and it is to be hoped that the expedition will not be postponed till next year, for although Mr. McConnell believes that Stefansson will be found drifting on the ice, as he is said to understand every trick of self-preservation known to Indian or Eskimo, a start which would have been too late under ordinary circumstances would probably be more than counterbalanced by using air scouts.

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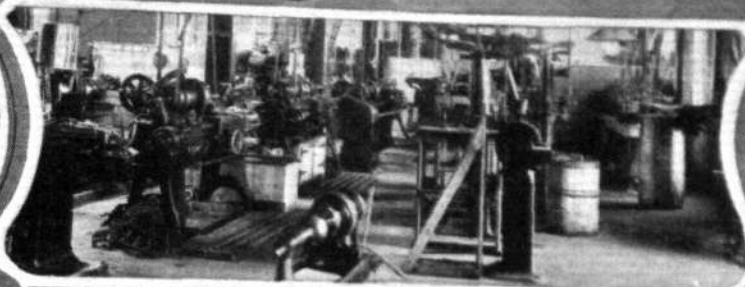
Charles C. Witmer, the American Curtiss pilot who has been in Russia since the beginning of the war to instruct officers in the handling of Curtiss flying boats, paid a short visit to New York about the middle of May, when he was interviewed by our contemporary *Aerial Age*. The flying boats which Mr. Witmer expects will keep him busy assembling and delivering for months to come are driven by 160 h.p. Curtiss motors, and have a place forward for a gun and gunner besides room for pilot and another man if required. The Russian sailors, Mr. Witmer says, have taken well to the flying boat type, and will soon have a chance to try those of larger size, like the "America," Rodman Wanamaker's trans-Atlantic boat. One interesting fact mentioned by Mr. Witmer was that the giant Sikorsky biplanes are not used in the Russian operations, not having proved practical for army service. Sikorsky, he said, was building machines of smaller size for the Government.

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From New York reports it would seem that the Germans are contemplating a change in their aerial tactics as regards the raiding of this country. According to the story circulated, the great air raid that is said to be under contemplation is to consist of squadrons each composed of one Zeppelin and three or four aeroplanes. This sounds almost too good to be true, but granting for the moment that it would be practicable for airships and aeroplanes to work together, which appears somewhat doubtful, the inference is that the raid will take place in the daytime, since the difficulties of keeping together, —and there are others—great as they would be by day, would be next to impossible at night. Should the raid prove to be more than a bluff, the result may be awaited with equanimity, for in the full light of the sun I hardly think they will have challenged our flying officers' superiority in vain. There is nothing our flying officers would welcome more than the chance of a scrap with the German machines whose duty it would presumably be to defend the Zeppelins. The latter might be disagreeably surprised at the welcome that would await them should they venture a visit without the usual mantle of darkness that has on previous occasions proved such an important factor in deciding the success of a hasty retreat after bombing "docks and wharves."

"ÆOLUS."

"AEROMNIA"



IN May, 1914, just a year ago, a cornfield at Leagrave, in Bedfordshire, was marked down for the establishment of an aeroplane factory. To-day the same spot is a busy hive of workpeople all strenuously engaged in doing their bit towards supplying the Government with fighting units in the form of aeroplanes. And this result has been brought about by the enterprise and expanding business of Hewlett and Blondeau, the partners in which are Mrs. Maurice Hewlett and Mr. Gustav Blondeau, whose respective portraits are embodied in the heading to the present slight tribute to their work. "Aeromnia," the heading chosen above, has significance in itself, and its application in this particular case is appropriate, by reason of its being the telegraphic address of the firm. That the partnership has proved a success is hardly surprising. It was yet early days in aviation when Mr. Blondeau was studying in the Farman school at Mourmelon, where he graduated for his *brevet* on June 10th, 1910. Then followed a course at the Gnome works, where he was able to equip himself with a thorough knowledge, backed by actual experience in the building of the Gnome engine, which later stood him in such good stead when he opened his flying school at Brooklands, where we believe the first pupils actually attached formally to a school in England, were put through their paces.

Mrs. Hewlett, the other active member of the firm, who was already well known in motoring circles, at an early stage realised the future possibilities of aviation, and, like everything she touches, at once after having entered the arena made ready to go through the whole business thoroughly, including the then very trying ordeal of becoming a pilot—and how well she succeeded is now history. For is it not recorded in the pages of FLIGHT when Mrs. Hewlett obtained her ticket at Brooklands on a Hewlett and Blondeau built Farman on August 29th, 1911, and presently, not satisfied with having proved the power of woman to ride the wind, how she became instructress to her own son and saw him through his tuition period, also at Brooklands, right up to the day, November 14th, 1911, when he followed in his mother's path and took his Royal Aero Club *brevet*? Flight Lieut. F. E. T. Hewlett's participation and adventures a short time back in connection with the Cuxhaven raid, in which he came near to an untimely end, will still be fresh in the memory of our readers, whilst his promotion last week to Squadron Commander puts the finishing touch to that episode in his career.

The partners have each taken their business seriously from the start. Slacking off because of the rebuffs and set-backs which fell to their lot in the earlier days of the industry, never held good for a moment. They both believed in the future, and their faith has now more than

justified their hopes. The firm is numbered amongst the successful of to-day, and no work being delivered to the Government has a higher reputation for quality and finish than that entrusted to them. Mrs. Hewlett is herself an indefatigable worker, and moreover a shrewd business woman, with a remarkable talent for organisation.

It was at Brooklands the firm had the honour to secure the first prize offered there, on the first machine they ever built, Lieutenant (as he was then) Snowden-Smith being first in on a biplane in the Brighton race. Success attended the building of machines at Brooklands to such an extent that soon the works became too small to accommodate the growing business, and a move was made to Clapham. Luckily the crazy revival of roller-skating just about then was dying a natural death. This gave the firm an opportunity of securing the disused rink, where they tackled aeroplane construction in real earnest, building machines of any description to customers' designs. During their stay at this place they turned out no less than ten distinct patterns of machines, including the Hanriot and the Caudron, the latter being the first of these machines built in England. Unlike many other aeroplane builders, they have not attempted to market a machine carrying their own name, contenting themselves with carrying out construction for others, and they have done wisely, for their reputation has gone forth that their workmanship is such that to entrust them with a contract is to ensure the highest efficiency skill can give. It is hardly surprising, therefore, that the works, large as they were, soon became again too small for this ever-growing business, and a move had to be made to the open country at Leagrave, near Luton, where, purchasing ground in size large enough to establish an aerodrome, they have at last found room for vast expansion. And it is here in the one-time cornfield that the Omnia factory has had its being, with the prospect of ever becoming larger as the months go by.

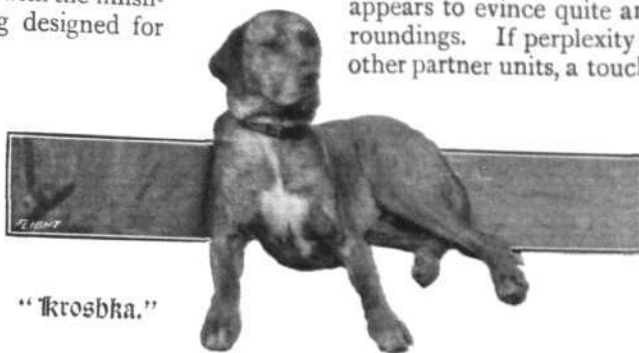
To such good purpose did the architect, builder, and his assistants set to work, that by the time war broke out in August they were nearly ready to take Government orders. It was then but a short spell for them to get going, and ever since they have been working full time for the nation's needs in aircraft. Self-contained, no third-party responsibility with regard to the supply of parts, and everything under personal supervision have gone a long way to secure the success which has resulted. Nothing but raw material is purchased. Every bolt, strainer, strut-socket, dome, engine plate, stamping and forging is made on the premises, and all tube-bending and woodwork is manufactured in the works. It will naturally be supposed that the machinery plant is a large one, and a glance at the accompanying photographs, which



"AEROMANIA." SOME VIEWS IN MESSRS. HEWLETT AND BLONDEAU'S WORKS.—1. Part of the erecting shop; in the background the enclosed inspection department, where small fittings are inspected and passed. 2. A corner of the stamping and forging mill. 3. In the stores. 4. One side of the metal-machining shop. 5. Oxy-acetylene welding shop. 6. Tool-makers' shop. 7. Rough planing and sawing of timber; on the left some B.E. 2 Cs. in course of erection. 8. A bench in one of the fitting shops.

include a part of the machinery building, will give an idea of the thoroughness of the installation. Large as it is, however, it is continually being augmented as necessity arises, and on the day of our visit three huge machines, larger than anything previously there, had just arrived and were awaiting erection, whilst three similar ones were on order and yet to be delivered. Meantime the builders were hard at work with the finishing touches to a new building designed for their accommodation.

Everywhere in the busy works order and earnest application are seen, the shops being bright, healthy and spacious. No murmur of discontent is heard. It is a case of all working in harmony for their own, the firm's and the country's good.



"Krosbka."

Truly the proverb about small beginnings seems likely to be proven, but the end is not yet.

And by way of a final reference to the partnership, there is a third unit, the much-loved "Krosbka"—the dog-watchman—who has grown up with the progress of the business almost from the start. Day in and day out Krosbka sits watching the growth of the aeroplanes, and appears to evince quite an intelligent interest in his surroundings. If perplexity at times comes to one of the other partner units, a touch of the head of "man's friend"

as he quietly sidles up for a caress seems to smooth out any difficulties that but a moment before might be causing anxiety. So it is but fitting that the third partner should, as a tail piece, adorn the close of this little tribute to two of the early workers in the aviation industry.



FLYING AT HENDON.

PLENTY of flying was witnessed at Hendon last Saturday afternoon, the proceedings opening at about 3 o'clock with an exhibition trip by M. Osipenko on the 50 h.p. G.-W. school 'bus. Marcus D. Manton took over the same machine shortly after, and put up a high climb with some pretty spirals. The next out were W. Roche-Kelly on the 50 h.p. Beatty biplane, and J. H. Moore on the 45 h.p. L. and P. biplane. Moore's engine was not putting up the necessary revs., so a rapid inspection of the engine after landing revealed some troublesome plugs. These were replaced with new ones, with much better results during the next flight. In the meanwhile Kelly had ascended on the 60 h.p. (Wright) Beatty biplane, first by himself, then with a passenger, and Manton and J. S. B. Winter took up passengers on the G.-W. 'buses, whilst Osipenko ascended with three passengers on the 100 h.p. G.-W. five-seater biplane, and made what appeared to be an exceptionally low flight over the surrounding country. Following this, Moore took up a khaki passenger on his L. and P. biplane, and shortly after made another passenger flight. Osipenko also made three more flights on the five-seater, without

breaking the altitude record or the machine. By now most of the visitors had left, and the rest of the evening was devoted to school work. Kelly made a flight on a new—for him—mount, the 45 h.p. Caudron, but for all outward appearances he might have been flying this type of machine as long as he has the Beatty-Wright.

The star turn of Sunday afternoon was the fine record flight by H. Hawker on a new type 80 h.p. Sopwith tractor biplane. Climbing for about 1 hr. 20 mins., he reached an altitude of about 20,000 ft., being, of course, for most of the time completely out of sight. It took him 20 mins. to descend. He made many feel very envious by saying he felt the cold, up there, very much! Other pilots up during the afternoon were:—M. Osipenko on the 50 h.p. G.-W. school 'bus and the 100 h.p. five-seater; Marcus Manton (stunts) on the G.-W. school 'bus, J. S. B. Winter on similar machine; W. Roche-Kelly on the Beatty biplane; E. Baumann on the 50 h.p. Ruffy-Baumann biplane; and J. L. Hall on his 45 h.p. Caudron. The latter pilot gave a fine exhibition including some steep dives and one of his pretty spiral descents with the engine stopped.



The Premier at the Front.

DURING his recent visit to the British Headquarters, Mr. Asquith, the Prime Minister, spent some time, on the 1st inst., in inspecting the headquarters of the Royal Flying Corps, and in watching the work of the flying officers at the front.

Firing on Zeppelins.

IN the House of Commons on Wednesday Mr. Fell asked the Under Secretary for War if the War Office had now decided to order all armed troops to fire on all Zeppelin airships on their raids over this country whenever they came within range of their rifles.

Mr. Tennant replied that orders are and have been for some time that all Zeppelins are to be fired at as and when they offer a target.

Mr. Fell: Does that cover rifle shooting as well as anti-aircraft guns?

Mr. Tennant: That would cover any case where there was a possibility of hitting.

Compensation for Air Raid Damage.

SIR G. PARKER, in the House of Commons on Tuesday, asked the Prime Minister whether in the case of destruction of property caused by aircraft attack such as occurred in the raid last Friday night it was proposed to grant compensation to owners of property from public sources. Other hon. members asked whether compensation would also be paid in the case of the air raids on London and the East Coast; while Sir A. Markham asked if the right hon.

gentleman was aware that insurance companies who are taking these risks definitely state that if the Government pays claims they, although they have received the premium, will pay no claim to the person insured.

Mr. Asquith replied: Relief will be granted in these as in all previous cases. The Government are also considering the possibility of initiating a scheme of insurance of property.

In reply to questions put on Wednesday,

Mr. Asquith stated that the Government's policy of paying compensation for injury caused by hostile aircraft would apply to personal injury or loss of life as well as to injury to property.

To a supplementary question as to whether it was necessary for householders to continue insuring until the Government scheme of insurance was introduced, Mr. Asquith said it would be a prudent thing to do.

Precautions Against Bombs.

ON Wednesday the Home Secretary was asked if he would issue to the public instructions as to the best means of taking precautions against the effects of explosive bombs, asphyxiating bombs, and incendiary bombs dropped by aircraft.

The Home Secretary said the Commissioner of Police had prepared instructions on the subject, and they would be published as soon as they had been approved of by the expert advisers of the Admiralty.

THE SCREW PROPELLER.

By F. W. LANCHESTER, M.Inst.C.E.

(Concluded from page 402).

29. The question of *slip*, or the difference between measured and effective pitch, is one on which it is important to be clear. On the one hand, *effective pitch* only has a definite value so long as the propeller is run at its appropriate thrust, that is to say at a thrust appropriate to the velocity of flight (the velocity of the vessel in the case of the marine propeller); on the other hand, the measured pitch of any given propeller is a purely arbitrary quantity—it depends entirely upon the basis of measurement. Beyond this, the measured pitch of a propeller may, and often does, vary from point to point along the length of the blade; it is then impossible to speak of the (measured) pitch of the propeller at all, the term ceases to have any meaning. When the propeller has no definite measured pitch it becomes impossible to define the term *slip* as applied to the propeller as a whole, one can only speak of the slip of its different annular elements. Thus, if we must talk of slip, the first matter is to define the premises. The *effective pitch* is sufficiently defined by the main investigation—it is the distance moved by the flying machine or vessel through the fluid when the propeller is working under the conditions of its theoretical *C* value—the constant of the expression $\text{thrust} = \text{area} \times C \rho V_1^2$. The *measured pitch* should in the opinion of the author be the *pitch of the hypothetical chord*. This, it is true, is not always a measurable quantity, but if the propeller has been designed by the author's methods it is known to the designer. Investigation shows that on this basis the *mean slip velocity* v_3 will be given by the expression,

$$v_3 = v_1 \frac{\eta}{\sin \theta \cos \left(\theta + \frac{\eta}{2} \right)}$$

or as given graphically by the construction in Fig. 21.

Thus, the slip ratio will be equal to v_3/v_1 , and two typical examples of what may be termed a "slip curve" are given in

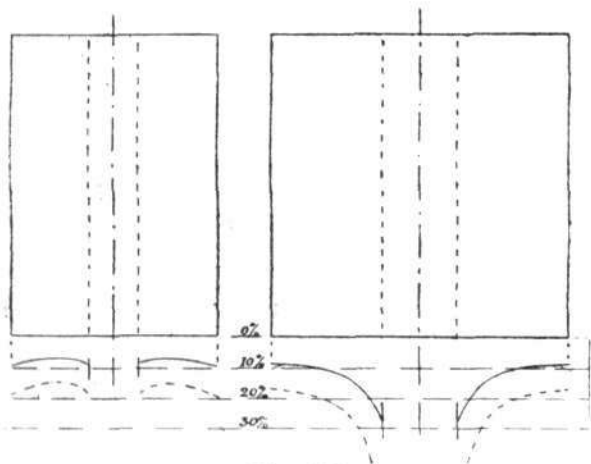


Fig. 24.

Fig. 24; the first of these is the case of maximum efficiency (*K*-optimum). It may be noted that the slip over the whole area is not far from uniform; it is least at a point corresponding on the curve in Fig. 20 to that of highest efficiency. When, however, we take the second example in which $K = 0.15$, the slip curve is of a totally different type, the slip is far greater in and around the central part of the disc; so also in the other cases of $K = \text{constant}$. The only real interest this question of slip possesses from the author's point of view is that when, as in a preceding section, comparison is instituted with established practice in marine propulsion, it is necessary to be able to talk in the language of the naval architect. In the chapter on Propulsion in the author's "Aerodynamics" the following opinion is expressed: "The term *slip*, in its application to a screw propeller, is one that leads to confusion of thought; it is unscientific in its present usage, and would be better abolished." This, as a concise statement of the author's view, cannot be improved.

30. Fig. 21, of which considerable use has been made in the course of the investigation, perhaps requires a few words by way of explanation.

The velocity v is obtained by an ordinary parallelogram of forces, it being originally supposed that a stationary lamina, represented by the curve of primary camber, causes a deflection of the stream at velocity V through an angle $= \eta$. It is next supposed that the whole system has superposed on it a velocity $= V$ in the direction of,

and in the sense contrary to, that of the original stream; the resolution given then defines the motion of the fluid, both as to direction and magnitude (v as given), on the basis that the lamina is in motion in a fluid initially in repose.

31. Reference has been made to a dynamical demonstration that the *hypothetical chord* is the correct measure of the blade pitch for any particular annular element. Referring to Fig. 21,

Let, as before, m_1 = mass per second acted upon.

" " v = the velocity imparted to the fluid.

and let w = total pressure reaction on blade element.

$$\begin{aligned} \text{Then,} \quad \text{Energy} &= \frac{m_1 v^2}{2} \\ \text{and} \quad \text{Resistance} &= \frac{m_1 v^2}{2V} \\ &= m_1 v \frac{v}{2V} = m_1 v \sin \frac{\eta}{2} \\ \text{but} \quad w &= m_1 v \\ \text{or} \quad \text{Resistance} &= w \sin \frac{\eta}{2} \end{aligned}$$

That is to say, the angle of the hypothetical chord is the measure of the aerodynamic resistance coefficient.

This has some bearing on the slip ratio, Fig. 24. The solid lines represent the slip ratio on the foregoing basis, whereas the dotted lines represent the possible limit.

32. A question of some interest is that of the relationship which might be looked for between the screw propeller and the "helicopter"; in short, is the helicopter to be considered a special case of the screw propeller, and can any continuity be traced between the generalisation expressed by Fig. 23 and the extreme case where $K = \text{infinity}$? The author's view is that there is no real continuity, at least not without some revision of the line of treatment; in the general theory is based definitely on the question of efficiency—in a sense, that does not apply at all to the case of the helicopter. Probably, also, the method of treatment breaks down before very high values of K are reached. On the other hand, the physical facts are such as would suggest continuity of some kind: the matter is left for future investigation.

33. Certain other branches of the subject have been excluded from the present paper. The limitation due to cavitation, for example, as affecting design in the case of the marine propeller, has not been dealt with; also the influence of the frictional wake stream as due to the body propelled, and as affecting the question of propulsion, has also been excluded. In respect of both these, the conditions are entirely different in the two cases of the aeronautical and the marine propeller, and may be considered as legitimately separable from the theory of the screw propeller as such. Thus, in the flying machine the cavitation limitation does not exist; also contrary to the conditions of marine propulsion, the aeronautical propeller can rarely be so placed as to effectively capture the frictional wake. Both these matters have been dealt with to some extent in "Aerial Flight" §§ 12, 82 and 215; also §§ 199 and 200.

34. One point which may be introduced as meriting discussion is the treatment of the central or "blind" portion of the propeller. The designer commonly has the choice of supporting the blades either directly off a boss of large diameter, as in the well-known Gifford propeller, or of carrying extensions of the blades inward to connect to a boss of ordinary size, the latter being the more usual practice.

The relative merit of the one or the other plan, apart from constructional convenience, is solely a question of relative resistance. Thus for a well-formed streamlike boss the resistance in terms of normal plane (of the same projected area) is about 1/16th. For a well-formed strut section, such as would be suitable to form the arms of the propeller blade, the similar coefficient is commonly about 0.15 or 0.2, never, it would appear, less than 1/8th; consequently, given that arms are designed of sufficient strength, the matter resolves itself into a question, roughly speaking, of whether the (spirally) projected area of the arms is greater or less than half of the projected area of the (alternative) boss. Thus, in the case of a high speed—and, therefore, heavily loaded—marine propeller it may be distinctly advantageous to employ a large diameter boss, whereas in the aeronautical propeller any such feature may be deemed out of the question.

If, as may sometimes occur, the boss forms naturally a part of the streamlike section of the hull or fuselage, the circumstances are different, and the choice, in the sense discussed, is no longer in the balance.

35. In conclusion, a few words may be said on the subject of the foundation of the present investigation. When examining any piece

of work critically, one of the first things which demands scrutiny is the ground basis on which the main argument is founded, and it is well in every case that this should be clearly stated. In the present case the said basis is singularly slight, at least so far as the experimental side is concerned; the sum of this is contained in the assumed value of the coefficient of skin-friction; that is to say, *the only experimental data utilised* is that relating to the direct resistance of the blade as expressed by the augmented skin-frictional coefficient as it is known to experience. Alongside of this we have the assumption of a curve based on the theory of the compound nature of the total resistance as given in Fig. 17, and defining the relation of the pressure constant C and the resistance coefficient γ ; as already stated, an experimentally ascertained curve may be substituted for this if preferred. In addition to the foregoing the author has drawn considerably on existing hydrodynamic theory, in the estimation of the type of the vortex and its dynamic equivalent, as embodied in the assumption by which the peripteral area is defined.

36. A few words may be said as to the deficiencies of present experimental data, to which reference has been made in the investigation constituting Part III.

It has not been recognised as it should have been by those undertaking the work of experiment that no comparison is valid which is instituted between an aerofoil whose lines are conformable to its field of flow, and one whose attitude or camber does not conform, and which consequently is prone to give rise to flow of the type known as "discontinuous"; otherwise to set up eddies. It was shown by the author in 1907 in his "Aerodynamics" that there is a definite relation between the aspect ratio n and the angle of attack α and of trail β which define the camber, which corresponds to the condition of least resistance; these values were tabulated (Table V., p. 262) for different values of n with what turns out to have been considerable accuracy. The matter has been reinvestigated by the author in his recent paper with a similar result, and a simple approximate expression which in a measure defines this relation is deduced. Now, in the experimental work which has hitherto been done and published, the aspect ratio is varied without regard to the relation aforesaid, and consequently we have aerofoils which "fit" their work and those which do not fit their work all tested, and the observation data tabulated and plotted, under the pretence that the

results given properly represent the results of changing one condition at a time—namely, aspect ratio. Any set of observation data taken on the above basis is in itself useless and misleading, except it be considered as pure empiricism. If a number of sets of observations were recorded on the above lines and the results plotted, a series of curves would result, and the envelope of these curves would be the curve we actually require.

37. In spite of certain pretensions to completeness in the conclusions of the present work, as exemplified, for example, in the solution given in respect of the "helicopter," and more fully in the results embodied in diagrammatic form in Fig. 23, there are many points of detail which may turn out one way or another to be of vital importance, and which have not even received mention. In applying, as has been done, the theory of the aerofoil to the propeller blade, one must not lose sight of certain differences in the conditions which need to be fully investigated either by theory or experiment before we are justified in considering ourselves sure of our ground. Thus, for example, there is the phenomenon of the centrifugal shedding of the "dead-water" which must take place in the case of the screw blade, and for which there is no parallel in the ordinary theory of sustentation or in the case of the aerofoil under normal conditions. Again, the symmetrical pressure variation along the two wings of an aerofoil, which gives rise to the two lateral surfaces of gyration or vortex sheets in ordinary rectilinear flight, can have no exact equivalent in the case of the propeller blade, where the pressure intensity, in order to accord with the régime, must on the whole increase from the axis outward.

The author believes that the present paper will be found to be of some service to those engaged on the design of propellers, especially where the conditions are foreign to the ordinary run of experience; in particular, the case of the aeronautical designer should be made more easy, where (as is usually the case) there is a conflict of interests to be served; in brief, where engine, propeller and ground clearance are at loggerheads. He hopes that the promising character of the results obtained will in some modest degree act as a spur to those engaged on aeronautical research, and give to the theoretical aspect of the subject a greater interest and weight as affecting the conduct of experimental work and the framing and control of the experimental programme.

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AIRCRAFT AND THE WAR.

Writing from Gallipoli under date May 23rd, a *Daily Telegraph* correspondent said:—

"The daily excitement of the land operations is a dual between an English captive balloon and Turkish aeroplanes. The balloon, which directs the gun-fire, is viewed with alarm and chagrin by the Turks. Not only do they aim every available gun at it, but immediately it appears an aviator is launched against the yellow spheroid. When this danger threatens the balloon returns to earth."

Writing from the Eastern Mediterranean Base on the 1st, a *Daily Telegraph* correspondent said:—

"Yesterday morning an enemy's Albatross type aeroplane paid us a visit. It flew over the town and encampments, but would not trust itself over the bay, where our ships' guns were waiting for it. The aviators threw two bombs aimed at our encampments. One fell close to where I was standing, but caused no other damage than making a hole in the ground. The other fell closer to the encampments, and from the explosion two men were slightly injured by flying splinters."

"This aeroplane flew at a great height, and disappeared immediately afterwards."

A Reuter telegram from Warsaw on the 1st inst., stated:—

"A bomb was thrown from a German aeroplane at Girardor and struck a cinema theatre full of people. It pierced the roof and the ceiling, and exploded in the hall, killing six persons and wounding twenty-five, mostly women and children."

In the "wireless" news from Berlin on the 1st, it was announced:—

"During May north of the Niemen 24,700 prisoners, 15 guns, 47 machine guns, and 1 aeroplane were taken."

The following information appeared in the *Journal* of the 2nd inst.:—

"Two Taube aeroplanes flew over Nancy on Monday. They were vigorously bombarded, and immediately beat a retreat, pursued by a French aviator."

"Two bombs which were dropped by the Taubes, fell in the fields, doing no damage."

The *Morning Post* correspondent in France, writing on June 2nd, said:—

"During the last week the Germans have made a determined attempt to cut through round Dixmude from the north-east, having prepared the ground by a severe bombardment, in which their artillery was helped greatly by daring reconnaissances by their aviators, who flew low over the Belgian trenches peppering them with bombs and dropping smoke indicators as range markers. The enemy lost very heavily both in men and materials."

A central News correspondent at Amsterdam in messages on the 2nd inst., said:—

"Bombs dropped upon the German aerodrome at Douai and at Echevi le caused considerable damage."

"The German military authorities ordered the population to evacuate a village behind the front (in the neighbourhood of Ecurie). The Allies' airmen observed a general move of the inhabitants to a place more to the east."

Writing from Milan on the 2nd inst. to the *Daily Telegraph*, Mr. A. Beaumont said:—

"The official *communiqué* to-day mentions the attack of two aeroplanes on Bari and Brindisi, and the details which have now come to hand show that this was one more treacherous crime committed by a barbarous enemy who has learned his lesson well from those outlaws of civilisation who bombarded Scarborough and sank the 'Lusitania.' The Italian censor has allowed the publication of the following in various Bologna papers: During the course of the afternoon of the day before yesterday the people of Bari saw a biplane with an Italian flag flying over their town, and cheered it, as was quite natural, since it bore the national colours. But the following morning, about dawn, the few people who were in the streets again saw a biplane with the Italian tricolour flag, and of course they saluted it once more with joy. They had hardly done so, however, when the treacherous visitor dropped a bomb over the Piazza Roma, which burst with a loud explosion, and killed a boy of 14, Michele Ranieri, a homeless waif who had spent the night sleeping under the porch of the palace belonging to Signor Vito di Tullio."

"Immediately the aeroplane, with its Italian flag still treacherously floating, dropped a second bomb in the Via Crisancis, which injured

a labourer; and finally a third bomb, which exploded in a courtyard, without hurting anybody. The aeroplane then disappeared from Bari, but soon after it was learned that it had flown also over the peaceful little village of Molfetta, where it dropped four bombs, three of which exploded, killing a workman and injuring a lady."

The following account of the bombardment of Venice on May 24th has been sent to the *Journal des Debats* by a correspondent on the Italian frontier:—

"An Austrian aviator flying over the town at 3.30 in the morning at a height of nearly 10,000 ft., released an enormous parachute, to which was suspended incandescent matter lighting up the ground beneath. A flotilla of Austrian aeroplanes, also flying at a great height, then arrived on the scene and attempted to destroy the arsenal, but the bombs merely killed three or four civilians."

An Austrian *communiqué* on the 2nd inst. stated:—

"The result of the bombardment of Pola by an Italian airship, as reported in the *communiqué* issued by the staff of the Italian Admiralty, is incorrect. Four bombs exploded, but the damage done was very slight, and no fire broke out."

The *Daily Telegraph* correspondent at Rotterdam, writing on the 3rd inst., said:—

"After aerial reconnaissances on a large scale during the last few days, the Allies are developing an offensive on the front from Bixshoote to Ypres. Along the northern part of the line a terrific artillery battle is raging, and all to-day South Zeeland has reverberated to the sound of the cannonading."

"Great success has been achieved by the Allies' airmen. They have not only located the positions of the batteries as a prelude to the work of the guns now in action, but have done considerable damage to railway and other points of communication behind the German lines. Yesterday and Tuesday there was a series of organised raids by squadrons, which dropped bombs on buildings and railway points, among other places at Bruges and Ghent."

"By a recent raid at the latter place a very important success was achieved. Whilst the buildings of the station of Saint Pierre were not destroyed, as has been stated, the damage done was much more serious in its effect on the enemy's communications, for it consisted in the destruction of the tunnels through the station over which the lines run. These tunnels were of elaborate construction, and it will be a long time before they can be repaired sufficiently to enable the lines to be relaid."

In the *Telegraaf* of the 3rd, a Bruges correspondent stated with regard to the fighting round Hill 60:—

"Numerous aeroplanes appear every day and drop bombs into the trenches, with varying success. Last night bombs were dropped near Zeebrugge."

A *Morning Post* correspondent in Amsterdam, writing on June 3rd, said:—

"For a week past activity on the part of the Allied airmen in Flanders has been very marked. Almost every day aviators appear along the Belgian coast, especially over Zeebrugge, Blankenberghe and Ostend, and drop bombs on the German positions, many of these having been damaged or destroyed. The aeroplanes also do excellent work in reconnoitring German movements. Both the English officers who were interned in Holland yesterday ascended at Dunkirk, and were heavily fired at, but their aeroplane was not hit. The officers were to-day conveyed to the internment camp at Groningen."

In a *communiqué* issued in Berlin it was stated:—

"In the Vosges our airmen bombarded the communication centre and railway junction of Remiremont, and an enemy military camp near Hohneck. Minor local fighting took place last night in the district of the Fecht Valley, near Metzeral."

In the "wireless" news from Berlin on the 3rd there was the following:—

"The Wolff Bureau correspondent learns from a good source that in the last Zeppelin raid on London an airship reached Finchley, on the northern outskirts of London, and it must have flown over the greater part of the city. According to the same source, the damage caused is much greater than has been announced."

A Reuter telegram from Athens on the 3rd stated:—

"An Allied seaplane has been sighted over Nazareth."

An Exchange telegram from Athens on the 3rd inst. stated:—

"Advices from Mitylene state that German aeroplanes flew over Moudros and discharged a number of bombs. Eighteen Zouaves were killed and wounded."

A message from Bellegarde to the *Echo de Paris*, on Friday, states:—

"The news received from Trent gives an idea of the importance of the raid carried out on May 30th by an Italian airship on the arsenal at Pola. The arsenal suffered enormous damage by fire caused by the explosion of four bombs. The setting on fire of the naphtha depot had all the more disastrous consequences as this product is beginning to run short in Austria, and the Government has great difficulty in procuring supplies."

A *Morning Post* correspondent at Stockholm on June 4th reported:—

"A telegram from Falsterbo says that a Zeppelin flying southwards at an altitude of 2,000 ft. was sighted there yesterday."

A message from Rome to the *Matin* on Saturday said:—

"An Italian cruiser yesterday found a waterplane lying on the water off Brindisi. It was of German make and bore the mark L 32. Documents on board the aeroplane indicate that the enemy aviators must have been drowned. The machine was slightly damaged, and it is believed to have been the same one which bombarded Brindisi the previous day."

A message received in Amsterdam on Saturday from Berlin states that it is learned from a competent source that the aerial attack on the Crown Prince's headquarters resulted in several men being killed by the bombs, but otherwise the attack was unsuccessful.

According to advices received from Paris, a Taube flew over Calais at noon on Saturday, dropping several bombs. The damage done was unimportant, but one person was killed.

A *communiqué* issued in Berlin on Saturday stated:—

"We dropped bombs on the aerodrome at Dommartemont, near Nancy."

In the "wireless" news there was the following:—

"We yesterday dropped bombs on Calais and the flying ground at St. Clément, near Lunéville."

The *Daily Mail* correspondent at Athens, writing on Saturday, said:—

"Two German aeroplanes have again appeared over Mudros (Isle of Lemnos) and have dropped bombs, but without causing any damage. The Allied aeroplanes chased the Germans, who disappeared in the direction of the Dardanelles."

A *Daily Mail* correspondent in the North of France, writing on Sunday, said:—

"An Aviatik flew over Calais yesterday at midday and dropped seven bombs, mostly in the neighbourhood of the Gare Maritime. One woman was killed and another slightly injured. A bomb fell about fifty yards from the American Consulate. After dropping them the raider flew away over the sea. The damage done was insignificant."

A *Daily Telegraph* correspondent at Bucharest, writing on Monday, said:—

"An eyewitness who has returned from Constantinople reports the success of an English air raid over Ak Basch, in the harbour of Gallipoli. Nine seaplanes dropped bombs on this base, killing three and wounding over a dozen soldiers of the transport service. Severe damage was inflicted on animals and materials of the transport."

In a message from Valenciennes on Monday the *Telegraaf* stated:—

"Allied aviators have recently dropped bombs on the town, causing little damage. Contrary to the laws of war, the Germans have now placed civilians as hostages in buildings which serve for military purposes. Germans justify this measure with charges of espionage."

The *Echo Belge* states:—

"An extensive plant has been established at Vilvorde, near Brussels, under the guard of anti-aircraft guns, aeroplane attacks being feared. The output of gas, which was already huge, has been increased by orders from headquarters after the successful bombardment of the Ludwigshafen gas factory."

In a *communiqué* issued in Berlin on Tuesday it was stated:—

"Near Douai an enemy aeroplane was shot down. South-west of Plock an enemy aeroplane was forced to descend, and was captured."

Models

Edited by V. E. JOHNSON, M.A.

A Wireless-Controlled Model Dirigible.

By P. HASELOCK.

IN view of the queries which have recently appeared in FLIGHT re the wireless control of aeroplanes, I thought the particulars of a wireless-controlled dirigible given below might be of interest.

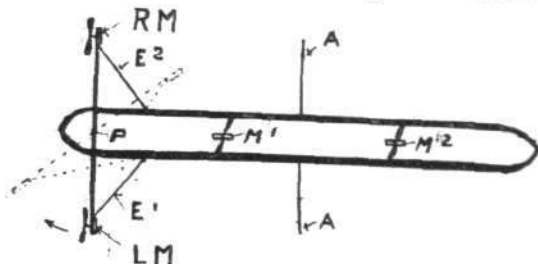


Fig. 1.—A. Antennæ. E¹ and E². Cords to control movement of boom. P. Point upon which boom swings. R.M. Right motor. L.M. Left motor. Dotted lines show position of boom when turning to right.

Fig. 1, which shows the nacelle of the dirigible in plan form, gives only a general idea of the arrangement of the motors. The front boom is pivoted at the point, P, so that in order to turn to the right (the position shown being the "forward" position) the right motor is stopped and the left motor allowed to swing in the direction of the arrow to the full extent of the cord, E¹. The cords, when the boom

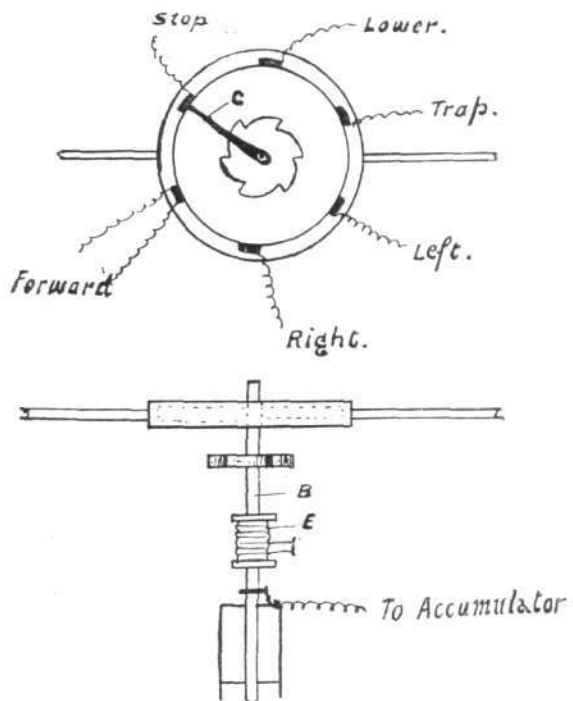


Fig. 2 (pawl omitted from plan for sake of clearness).

is in the "forward" position, hang loose. In its new position the tractor is acting at an angle to the forward line of flight. Similarly the right-hand tractor will turn the machine to the left.

The two motors, M¹ and M², which are fixed on the underside of the nacelle at about one-third of the entire length from either end, revolve in a horizontal plane in order to lower the dirigible.

Now comes the brain of the machine. This consists of a rim of wood, into which is fixed six segments of metal. These metal segments are connected up with the motors and the bomb-dropping trap. A metal spindle, B (Fig. 2), carries an arm of metal, C; also a ratchet wheel with six teeth. This spindle is made to revolve upon

its bearings by elastic wound upon a wooden drum, E. This movement is controlled by a pawl which is kept against the ratchet by means of a small spiral spring. An electro-magnet, C (Fig. 3), actuates the pawl, the wires passing to the coherer, D, and accumulator, E. A set of wires runs from another accumulator to all four motors; also to the electro-magnet which controls the bomb trap.

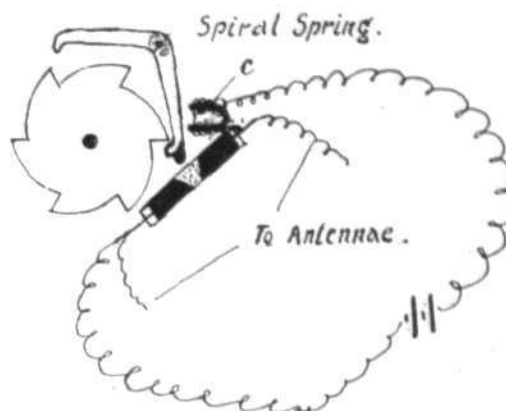


Fig. 3.

As will be seen from the above, the circuit is completed via the metal arm and whatever segment is engaged by same. The "forward" terminal is a joint one, and connects the two motors fixed to the boom.

The working of the apparatus is as follows:—When the tapping key of the sending station is depressed, the waves collected by the antennæ magnetise the filings in the coherer, and so allow the current from the accumulator to pass through and attract the pawl. This allows the ratchet wheel to revolve slightly. The pawl when attracted by the magnet taps the coherer, and so disarranges the filings. This breaks the circuit, therefore the pawl spring forces the pawl onto the ratchet wheel, which completes its first movement, the pawl now engaging another tooth. The metal arm within the wooden hoop now makes a contact with another metal segment.

We will suppose the arm is in contact with the segment marked "stop." Now if the tapping key is depressed the arm moves to the "forward" terminal. Another depression and it will connect the terminal marked "right," which is connected with the left motor, and causes the dirigible to turn to the right. If the arm is in the "forward" position, and the operator wishes the machine to turn to the left, one depression of the key brings the arm to the "right" position, but this is not the one required, therefore another depression is necessary before the position is obtained.

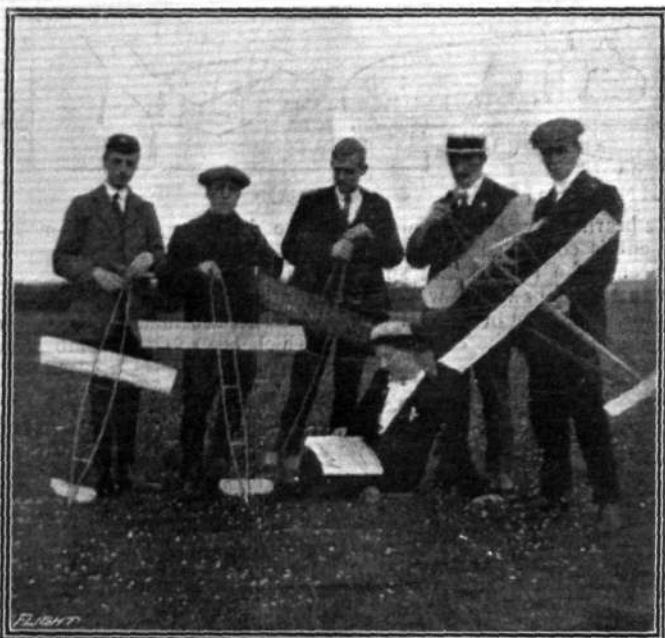
With reference to the wireless control of aeroplanes, I might say that about eighteen months ago I commenced experimenting with an apparatus intended to be fitted into a model aeroplane. Experiments with this apparatus, even though not so successful as I hoped, have shown me that it is possible, if one has enough time and money, to control models by wireless. I am hoping, when the war is over, to build a machine fitted with apparatus of improved design, which, perhaps, will achieve the success required.

[The foregoing will, we are sure, be read with the greatest interest by our model readers, and should be of great assistance to those thinking of experimenting in this direction. Especial notice should be taken of the fact that more than one depression, or in some cases more than two, of the "tapping key" may be necessary to bring the controlling mechanism to the correct position. In the case of a model aeroplane, lightness would have, of course, to be the especial feature of the apparatus.]

The Stony Stratford Model Aeroplane Club.

"Herewith I enclose a photo. of a group of regular flying members and friends taken on May 22nd," writes Mr. O. Hamilton, jun., "and hope it will be of use, especially as this is the first occasion we have had a snap.

"In the photo. the machines seen are, from left to right, 3 ft.



Some members and friends of the Stony Stratford and District Kite and Model Aeroplane Club.—Reading from left to right: H. Neave, E. Broom (Chairman), O. Hamilton, jun. (Sec.), H. Van den Brock, H. Mennell (Vice-Chairman). Sitting: Mrs. Mennell.

single, 3 ft. 6 ins. single (twin gear), 4 ft. single (single screw distance record), 3 ft. single (the most consistent single in the club), 4 ft. twin hollow spar r.o.g. (r.o.g. twin record holder).

"I hope to write again shortly re speed/loading table and its uses, &c., but I'm very busy at present.

"I have also a good snap of two members making adjustments, the snapshot being taken unbeknown to them at the time. Would it be of use?"

[Certainly; by all means send a print along.]

Reply to Query.

L. B.—You might try Cellon; it can be obtained in small quantities from Messrs. J. Bonn and Co.



For Use Against Poisonous Gases.

THE following is a formula issued by the French Academy of Medicine as an antidote to the noxious gases likely to be used by the Germans in their asphyxiating bombs:—

"Hyposulphite of soda, 1 kilo.; carbonate of soda crystals, 200 grammes; glycerine, 150 grammes; water, 800 grammes.

"Hyposulphite of soda is the chemical used by photographers for the fixation of negatives, films, &c., after development. Carbonate of soda is the ordinary household washing soda."

The above confirms the advice given upon the same subject the other week in FLIGHT.



New Use for Zeppelin Bomb.

A USE, other than that intended by the enemy, for Zeppelin bombs has been found by the Rev. J. S. Hole, who by exhibiting one at Foulness has added 16s. 6d. to the Times Fund for the Sick and Wounded.

Inquests on Air Raid Victims.

INQUESTS were held on the 3rd inst. on Samuel Reubens, aged 8, and Lily Lehrman, aged 10. Medical evidence showed that both children were terribly injured by metal fragments, and the verdict returned was "That the deceased persons died from injuries received from bombs dropped by hostile aircraft." On the following day an inquest was held on Eleanor Willis, aged 75, and the verdict was that "Death was due to shock following bombs dropped from hostile aircraft." On the 9th an inquest was held on Elizabeth M. Leggett, aged 11, and the jury returned a verdict to the effect that "Death was due to shock from burns sustained as

the result of a bomb flung from a hostile airship exploding in the room."

Portrait of Flight Sub-Lieutenant R. A. J. Warneford, V.C.

THOSE of our readers who are desirous of obtaining a very excellent photograph of Lieutenant Warneford should apply to F. N. Birkett, 97, Percy Road, Shepherd's Bush. He is supplying an 8 ins. by 6 ins. portrait for 1s. 6d.

U.S. Naval Officer Killed.

WHILE flying at a low altitude at Pensacola, Flo., on May 8th, a U.S. naval machine fell and the pilot, Ensign M. L. Stolz, was killed.

Wood and Wood.

PROBABLY there is nothing made in which the quality of wood forms so important a part as in aeroplane work. Lives, and very valuable lives, are dependent upon faultless timber. In this connection those responsible for the supplies to this country have quickly learned their responsibilities, and exercise the most scrupulous care in seeing to top quality only. Messrs. Joseph Owen and Sons, Ltd., of the Borough Saw Mills, Borough High Street, have always been noted for stocking high-class wood for every class of work, and in regard to aeroplane requirements have specially laid themselves out to be in the front rank of suppliers. One strong feature of their method of buying well seasoned black walnut is to have all logs specially selected for them before shipment from the States. Anyone requiring proof of the quality should pay Messrs. Owen and Sons a visit.



PUBLICATION RECEIVED.

Aeroplanes and Dirigibles in War. By Frederick A. Talbot. London: William Heinemann. Price 3s. 6d. net.



IMPORTS AND EXPORTS, 1914-1915.

AEROPLANES, airships, balloons, and parts thereof (not shown separately before 1910). For 1910 and 1911 figures, see FLIGHT for January 25th, 1912; for 1912 and 1913, see FLIGHT for January 17th, 1914; and for 1914, see FLIGHT for January 15th, 1915:—

	Imports.		Exports.		Re-Exportation.	
	1914.	1915.	1914.	1915.	1914.	1915.
January ...	5,945	20,382	210	435	879	13,706
February ...	28,132	380	106	138	441	18,823
March ...	27,731	280	1,934	7,218	1,440	5,090
April ...	11,384	2,189	1,175	23,986	1,473	275
May ...	17,062	178	4,059	12,530	9,484	8,250
	90,254	23,409	7,484	44,307	13,717	46,144



Aeronautical Patents Published.

Applied for in 1914.

Published June 10th, 1915.

5,649. SOC. ANON. DES ETAB. NIROPOT. Helicopters.
13,295. WM. BEARDMORE AND CO. AND A. BREMBERG. Mounting of aeroplane, &c., guns.

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